

REMARKS/ARGUMENTS

Favorable reconsideration of this application, in light of the amendments and the following discussion, is respectfully requested.

Claims 1 and 3-31 are pending in the present application. Claims 1, 23, and 30 are amended and Claim 2 is canceled by the present amendment. The changes to the claims are supported in the originally-filed disclosure at least at originally-filed Claim 2, Figures 4-6, and at page 21, line 25, to page 23, line 4. Thus, no new matter is added.

In the outstanding Office Action, Claims 1-6, 8-17, 18-28, 30, and 31 were rejected under 35 U.S.C. § 103(a) as unpatentable over Thompson (U.S. Patent No. 5,444,728) in view of Kasai (U.S. Patent No. 6,246,705); Claims 8 and 22 were rejected under 35 U.S.C. § 103(a) as unpatentable over Thompson in view of Kaminishi (U.S. Patent No. 6,618,406); Claims 10 and 11 were rejected under 35 U.S.C. § 103(a) as unpatentable over Thompson in view of Trotter, et al. (“A CMOS Low Voltage High Performance Interface” here “Trotter”); Claim 19 was rejected under 35 U.S.C. § 103(a) as unpatentable over Thompson in view of Canright (“Practical Design for Control Impedance”); and Claims 7, 18, and 29 were indicated as including allowable subject matter.

Applicants gratefully acknowledge the indication of allowable subject matter in Claims 7, 18, and 29 and traverse the rejections of the remaining pending claims.

Claim 1 is directed to a laser modulating and driving device and includes:

a modulation signal generating unit provided in a first substrate and configured to generate and output a laser modulation signal consisting of a pair of symmetrical small swing differential signals based on pixel data, the pair of symmetrical small swing differential signals swinging between a predetermined high voltage and a predetermined low voltage, wherein the predetermined high voltage is less than a supply voltage of a small swing differential signal output circuit of the modulation signal generating unit, and the predetermined low voltage is more than a ground voltage of the small swing differential signal output circuit and less than the predetermined

high voltage, and the modulation signal generating unit including a modulation circuit configured to produce a modulation signal and the small swing differential signal output circuit configured to convert the modulation signal to the pair of small swing differential signals.

The outstanding Office Action asserts that signals at terminals D1 and D2 of Thompson teach the symmetrical small swing differential signals as defined in Claim 1.

Thompson describes a switch driver 32 in which the input signal is processed to output a signal at terminal D1 that has a waveform equal to that of the input data and a signal at terminal D2 that has a waveform complementary to that of the input data signal.

However, Thompson does not teach or suggest a pair of small swing differential signals as defined in Claim 1, because the signals at D1 and D2 do not swing “between a predetermined high voltage and a predetermined low voltage, wherein the predetermined high voltage is less than a supply voltage of a small swing differential signal output circuit of the modulation signal generating unit, and the predetermined low voltage is more than a ground voltage of the small swing differential signal output circuit and less than the predetermined high voltage, and the modulation signal generating unit including a modulation circuit configured to produce a modulation signal and the small swing differential signal output circuit configured to convert the modulation signal to the pair of small swing differential signals,” as recited by Claim 1, where the gate drivers 232 and 234 would be small swing differential signal output circuits because they output the signals at D1 and D2. Instead, in Thompson, the high voltage in the swing of signals at D1 and D2 is equal to the supply voltage for the gate drivers 232 and 234, and the low voltage in the swing of signals D1 and D2 is equal to the ground voltage.

Further, Kasai does not cure the deficiencies of Thompson and is not cited in the outstanding Office Action as teaching “a modulation signal generating unit...configured to

generate and output a laser modulation signal consisting of a pair of symmetrical small swing differential signals based on pixel data,” as recited in Claim 1.

Because Thompson and Kasai, taken in combination, do not teach or suggest all the elements of Claim 1, Applicants respectfully request that the rejection of Claim 1 under 35 U.S.C. § 103(a) be withdrawn.

Claims 3-6, 8-17, and 19-22 depend from Claim 1 and, therefore, patentably define over Thompson and Kasai for the same reasons as Claim 1. Further, Kaminishi, which is cited with Thompson against Claims 8 and 22; Trotter, which is cited with Thompson against Claims 10 and 11; and Canright, which is cited with Thompson against Claim 19, also fail to cure the deficiencies of Thompson with respect to Claim 1 and also are not cited as teaching “a modulation signal generating unit...configured to generate and output a laser modulation signal consisting of a pair of symmetrical small swing differential signals based on pixel data,” as defined by Claim 1.

Thus, Applicants respectfully request that the rejections of Claims 3-6, 8-17, and 19-22 under 35 U.S.C. § 103(a) be withdrawn.

Claim 23 is directed to a laser modulating and driving device and includes “a pixel data generating unit configured to produce pixel data and formed in a first substrate” and “a modulation signal generating unit configured to generate a low-voltage laser modulation signal consisting of a pair of small swing differential signals from the pixel data, the modulation signal generating unit formed in the first substrate together with the pixel data generating unit and the pair of symmetrical small swing differential signals swinging between a predetermined high voltage and a predetermined low voltage, wherein the predetermined high voltage is less than a supply voltage of a small swing differential signal output circuit of the modulation signal generating unit, and the predetermined low voltage is more than a

ground voltage of the small swing differential signal output circuit and less than the predetermined high voltage.”

The combination of Thompson and Kasai does not teach or suggest all the features of Claim 23 because, as discussed above, neither Thompson nor Kasai teaches or suggests a pair of small swing differential signals as defined by Claim 23.

Further, the combination of Thompson and Kasai not only fails to teach or suggest a pixel data generating unit “formed in a first substrate; a modulation signal generating unit...formed in the first substrate together with the pixel data generating unit,” as conceded at page 6 of the outstanding Office Action, but a pixel data generating unit as defined by Claim 23 is also not “capable of instant and unquestionable demonstration as being well-known,” as required by MPEP § 2144.03, for the assertion of official finding of facts made at page 6 of the outstanding Office Action.

As stated at MPEP § 2144.03, “[i]t would **not** be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of **instant and unquestionable demonstration** as being well-known.”

Again, the outstanding Office Action concedes that a pixel data generating unit formed in a first substrate with a modulation signal generating unit has not been demonstrated by a combination of Thompson and Kasai. In addition, Applicants respectfully submit that a modulation signal generating unit “formed in the first substrate together with the pixel data generating unit,” is not well-known or capable of instant and unquestionable demonstration, and, thus, is not “obvious to one of ordinary skill in the art at the time of the invention.”

Because Thompson and Kasai, taken in combination, do not teach or suggest at least the pixel data generating unit and modulation signal generating unit as defined by Claim 23,

Applicants respectfully request that the rejection under 35 U.S.C. § 103(a) of Claim 23 and Claims 24-28, which depend therefrom, be withdrawn.

Claim 30 is directed to an image reproducing apparatus and includes “a laser modulation signal generating unit formed in a first substrate and configured to produce a laser modulation signal consisting of a pair of small swing differential signals based on pixel data, the pair of symmetrical small swing differential signals swinging between a predetermined high voltage and a predetermined low voltage, wherein the predetermined high voltage is less than a supply voltage of a small swing differential signal output circuit of the modulation signal generating unit, and the predetermined low voltage is more than a ground voltage of the small swing differential signal output circuit and less than the predetermined high voltage.”

As discussed with respect to Claims 1 and 23, Thompson and Kasai, taken in combination, fail to teach or suggest at least the above-quoted features of Claim 30.

Thus, Applicants respectfully request that the rejection under 35 U.S.C. § 103(a) of Claim 30 and Claim 31, which depends therefrom, be withdrawn.

Accordingly, the outstanding rejections are traversed and the pending claims are believed to be in condition for formal allowance. An early and favorable action to that effect is, therefore, respectfully requested.

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